BOGEN®
COMMUNICATIONS, INC.

SOLID-STATE PUBLIC ADDRESS AMPLIFIERS

C10C and C20C

The Bogen Models C10C and C20C solid-sate public address amplifiers are rated at 10 watts and 20 watts, respectively, and are UL and CSA listed.

The amplifiers will accommodate low-impedance balanced microphones. A front-panel selector switch allows one of the two microphone channels (MIC 2/AUX) to be used as an auxiliary input. The AUX input can be muted when a customer-supplied SPST normally-open switch is used for microphone precedence. Independent volume controls and a treble control, for tonal balance, are provided.

Balanced and unbalanced outputs are provided for 4-, 8-, and 16-ohm speakers and 25-volt constant-voltage systems. A terminal strip with screw terminals allows convenient connection of speakers, except 70-volt. For 70-volt operation, a quick-disconnect socket is provided.

The C10C and C20C amplifiers operate from a 120-volt, 60Hz AC source and have a maximum power consumption of 46 and 60 watts, respectively. A thermostat, enclosed in the power transformer, protects the unit against overloads.

INSTALLATION

UNPACKING

The amplifier was carefully checked before leaving the factory. Inspect the shipping container and unit carefully for indication of improper handling. If the unit has been damaged, make an immediate claim to the distributor from whom it was purchased. If the amplifier was shipped directly to you, notify the transportation company without delay and place your claim.

POWER AND GROUNDING

WARNING

To avoid a shock hazard, the amplifier must be properly grounded. It is the responsibility of the user to ensure that the amplifier is properly grounded.

The AC line cord has a three-prong plug which should be plugged into a three-wire grounded 120-volt, 60Hz outlet. If a three-wire outlet is not available, the use of an adapter is permissible as long as the grounding pigtail of the adapter is properly connected to ground.

INPUT CONNECTIONS

MICROPHONES: Two low-impedance balanced microphones can be simultaneously connected to the screw terminals on the rear panel.

MICROPHONE PRECEDENCE: A built-in circuit provides microphone precedence over the AUX channel. For this function, a customer-supplied SPST normally-open switch must be connected to the MUTE terminals. When the contacts are closed, the microphone will have precedence.

AUXILIARY: The AUX input may be used for any signal source having a high level (.15V) output, such as the Bogen TP-50A and TP-100A FM/AM Tuners and CPT-1D Cassette Player/Tuner.

OUTPUT CONNECTIONS

SPEAKERS: The amplifier may be used with speaker systems rated at 4, 8, and 16 ohms and with 25-volt and 70-volt constant-voltage systems.

Connect the speaker system directly to the speaker output terminals on the rear of the amplifier. Connect one speaker lead to the COM terminal and the other to the terminal corresponding to the impedance of the speaker system. For balanced output lines, remove the link between the COM and GND output terminals. If the line is shielded, connect the shield to the GND terminal. The 70V output is available only through the 3-pin connector.

CAUTION

To minimize shock hazard, Class 1 wiring, as defined in local building codes, should be used for 70-volt outputs. All other outputs may use Class 2 wiring.

OPERATION

POWER: The front panel ON/OFF switch applies power to the amplifier and is illuminated when the power is ON.

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TECHNICAL SPECIFICATIONS

Power Output:
C10C — 10W RMS
C20C — 20W RMS
Distortion: Less than 3% at RPO
Frequency Response: 80Hz to 10kHz ±2dB
Hum and Noise (20Hz to 20kHz):
MIC Input — 55dB below rated output
AUX Input — 70dB below rated output
Input Sensitivity:
MIC Lo-Z Balanced — 300μV
AUX — 150mV
Outputs:
C10C — 4, 8, 16 ohms, 25V (62.5 ohms), 70V (500 ohms)
C20C — 4, 8, 16 ohms, 25V (31.3 ohms), 70V (250 ohms)

Output Connections: Screw-type terminals for 4, 8, 16 ohms and 25V; quick-disconnect socket for 70V tap
Input Connections: Two MIC Lo-Z terminals, AUX Hi-Z jack, 500/600-ohm line with WMT-1 accessory
Controls: MIC 1, MIC2/AUX (selector-switch) TREBLE
Tone Control Action:
Treble — -11dB at 10kHz
Power Requirements: 120VAC, 60Hz
C10C — 46 watts
C20C — 60 watts
Dimensions: 11-3/8"W x 2-7/8"H x 7-3/4"D (28.9 x 7.3 x 19.7 cm)
Shipping Weight:
C10C — 5 lbs. (2.27kg)
C20C — 6 lbs. (2.7kg)

MIC 1, MIC 2: For two microphone inputs, the MIC 2/AUX selector switch should be in the MIC 2 mode. The MIC controls are used to adjust the volume of the microphone inputs. Rotate the controls clockwise to increase volume and counterclockwise to decrease it. Turn the controls to the minimum position if the inputs are not used.
AUX: For one auxiliary input, the AUX selector switch should be in the AUX mode. The AUX control is used to adjust the volume of the auxiliary input. Rotate the control clockwise to increase volume and counterclockwise to decrease it. Turn the control to the minimum position if the input is not used.
MICROPHONE PRECEDENCE: A built-in circuit provides muting of the AUX channel. Connections are made from an external switch to the MIC2/AUX MUTE terminals. An SPST normally-open switch is required for this function. When the contacts are closed, the AUX channel is muted.
TREBLE: Use the TREBLE control to adjust the tonal balance of the amplifier output.

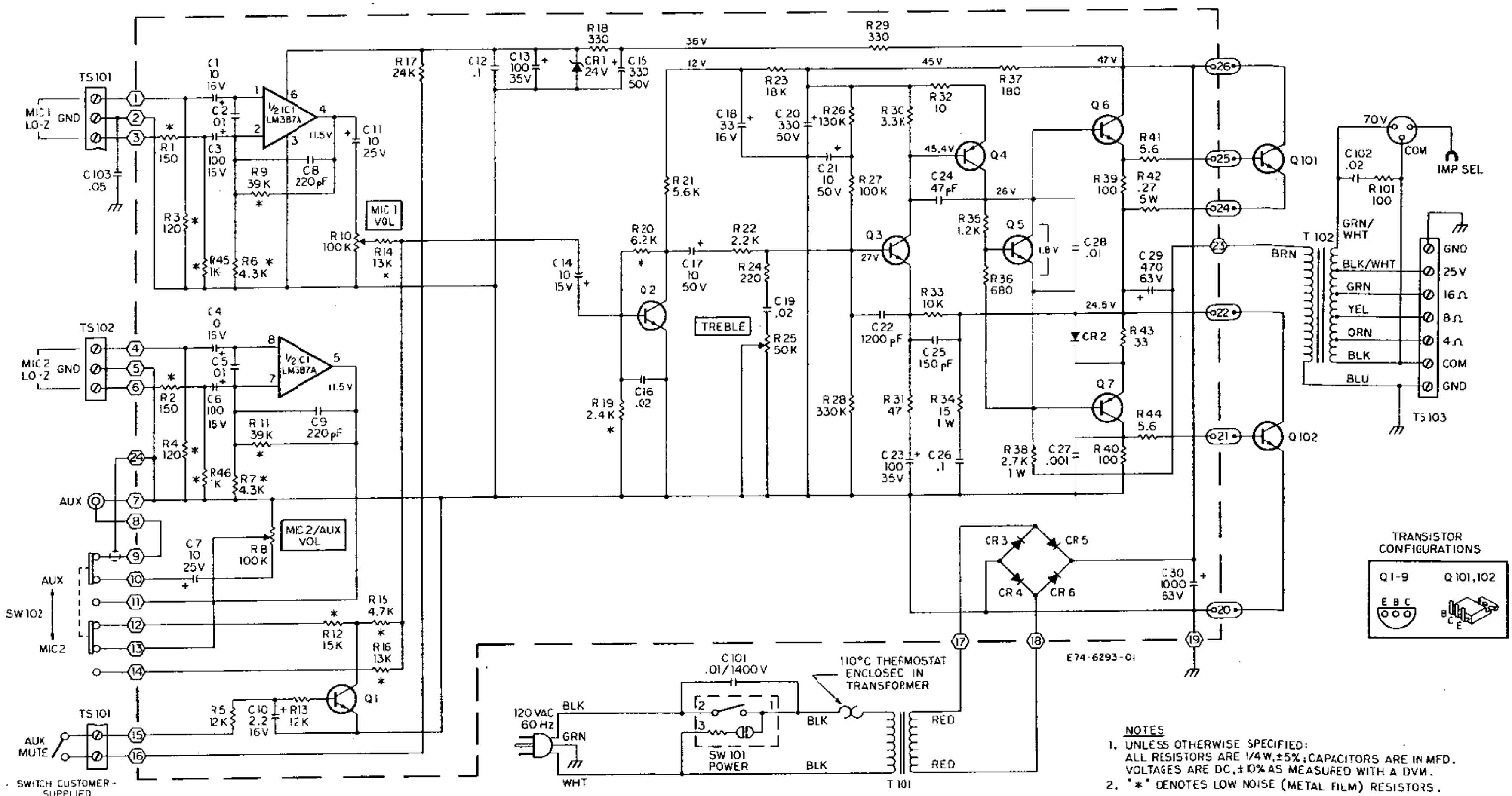
ACCESSORIES

WMT-1A LINE-MATCHING TRANSFORMER: The Bogen WMT-1A Line-Matching Transformer provides an impedance match between the amplifier and a 0 level, 500/600-ohm line. This may be a telephone line connected to the switchboard for internal paging or used with a wired music system. No soldering is required to connect the WMT-1A to the amplifier.

To connect the input from a balanced 500/600-ohm telephone line, mount the WMT-1A on the rear panel of eh amplifier, using the holes indicated on the rear panel. Connect the input line to the three-screw terminal board on the WMT-1A. Connect the phono plug on the WMT-1A cable to the AUX jack on the rear panel of the amplifier. If this jack is being used for other auxiliary equipment, the WMT-1A may be connected to the MIC input; to do this, the WMT-1A wiring must be modified, as described in the instruction sheet supplied with the transformer.
WMK-1 IN-WALL MOUNTING KIT: The Bogen Model WMK-1 In-Wall Mounting Kit is designed to mount the amplifier flush in a wall. Depth of the mounted unit is 3-1/2 inches. (Installation instructions are furnished with the kit.)
MODEL RPK-35B RACK PANEL KIT: The RPK-35B Rack Panel Kit is designed to mount the C10C or C20C amplifier in a standard 19-inch equipment rack.

Before fitting the panel to the amplifier, remove the screws and rubber feet from the bottom of the amplifier. Slide the amplifier into the rack panel from the rear. Using the screws from the feet of the unit, secure upward through the holes in the panel and the bottom of the amplifier where the feet had been mounted.

Overall dimensions of the RPK-35B are 3-1/2"H x 19"W with side panels 6-13/32"D (8.9 x 48.3 x 16.3cm). Cutout dimensions are 2-5/8" x 11-7/16" (6.6 x 29 cm). The panel is fabricated from cold-rolled steel and has a black finish.



MODEL	T101	T102	POWER LINE CURRENT
C10C	83-820-000	83-434-000	.38A
C20C	83-821-000	83-435-000	.5A

NOTES

1. UNLESS OTHERWISE SPECIFIED: ALL RESISTORS ARE 1/4W, ±5%; CAPACITORS ARE IN MFD. VOLTAGES ARE DC, ±10% AS MEASURED WITH A DVM.
2. "*" DENOTES LOW NOISE (METAL FILM) RESISTORS.

Schematic Diagram, Models C10C and C20C

MAINTENANCE

CAUTION

There are no user-serviceable parts within the amplifier. To avoid an electric shock hazard, have all internal servicing performed by qualified service personnel only.

The warranty will become void if repairs are made by other than the Bogen Service Department or authorized service agency.

OVERLOAD PROTECTION

The amplifier output is protected against overload and shorted speaker lines by a thermostat enclosed in the power transformer. If the breaker opens, the amplifier will have no output. Set the ac power switch to OFF and wait a reasonable time for the breaker to reset. Return the ac power switch to ON. If the breaker trips again, do not attempt to reset it, but have the trouble investigated by a qualified technician.

REPLACING TRANSISTORS

CAUTION

When soldering leads, use a heat sink (such as a small alligator clip) between the transistor and the source of heat.

When replacing the output transistors, clean all foreign matter from the heat sink, insulator, and transistor. Brush on a light coating of silicon compound to completely cover both surfaces of the insulator (Part No. 16-9278-01). Place the insulator between the heat sink and the replacement transistor. Use the original transistor mounting hardware to mount the replacement transistor.

BOGEN SERVICE

We are interested in the maintenance of your Bogen equipment. In the event of any difficulty, do not hesitate to ask our advice or assistance. Information can be obtained by writing to: Service Department, Bogen Communications, Inc., P. O. Box 575, Ramsey, NJ 07446.

When communicating with us, give the model and series designation of your unit. Describe the difficulty encountered and include details on the electrical connections to associated equipment. We will send you information if the remedy appears simple. If service is required, we will send you the name and address of the nearest authorized Bogen Service Agency.

When shipping your unit, pack it well, using the original shipping carton, or a similar container, with filler material to prevent damage in transit. Send the unit, fully insured and prepaid, via UPS or any responsible carrier. It will be repaired promptly and returned to you collect (freight prepaid while in warranty).

REPLACEMENT PARTS

Most components are standard parts available through reputable parts suppliers. The parts listed here may be obtained from Bogen distributors, service agencies, or directly from the factory. When ordering a part, specify the part number, as listed, the model of the unit and give the series designation, which is a letter followed by numbers, printed on the chassis. For parts on the circuit board, also give the component board assembly number, which begins with "45."

Schem. Ref.	Part No.	Description
		PC Board
—	**45-7354-05**	**PC Board Assembly**
C1,4,14	79-126-031	Cap., Elect., 10µF, 16V
C3,6	79-126-035	Cap., Elect., 100µF, 16V
C7,11	79-126-040	Cap., Elect., 10µF, 25V
C10	79-126-054	Cap., Elect., 2.2µF, 50V
C13,23	79-126-053	Cap., Elect., 100µF, 35V
C15,20	79-126-064	Cap., Elect., 330µF, 50V
C17,21	79-126-058	Cap., Elect., 10µF, 50V
C18	79-126-034	Cap., Elect., 33µF, 16V
C29	79-119-001	Cap., Elect., 470µF, 63V
C30	79-119-006	Cap., Elect., 1000µF, 63V
CR1	96-5344-07	Diode, Zener, 24V
CR2	96-5333-01	Diode, 400prv @ 1A
CR3-6	96-5193-01	Diode, 200prv @ 2A
IC1	96-5733-01	IC, LM387A
Q1,6	96-5290-01	Transistor, MPS-A05/2SC815Y
Q2,5	96-5213-01	Transistor, 2N5089/KSC945L
Q3	96-5298-01	Transistor, SPS1910/KSC945L
Q4,7	96-5283-01	Transistor, MPS-A55/KSA539
R8,10	77-001-810	Control, 100 kilohms, Audio
R25	77-001-809	Control, 50 kilohms, Audio
R41,44	76-146-121	Resistor, 5.6 ohms, 1/4W
R42	76-114-102	Resistor, .27ohms, 5W
		Chassis
C101	78-200-116	Cap., Cer. Disc, .01µF, 1400V
Q101,102	96-5232-03	Transistor
R101	75-442-101	Resistor, 100 ohms, 2W
SW101	81-009-035	Illum. Switch, 10A, SPST
SW102	81-003-065	Slide Switch
T101	83-820-000	Power Transformer (C10C)
	83-821-000	Power Transformer (C20C)
T102	83-434-000	Output Transformer (C10C)
	83-435-000	Output Transformer (C20C)
—	03-0686-01	Knob
—	14-9002-02	Foot